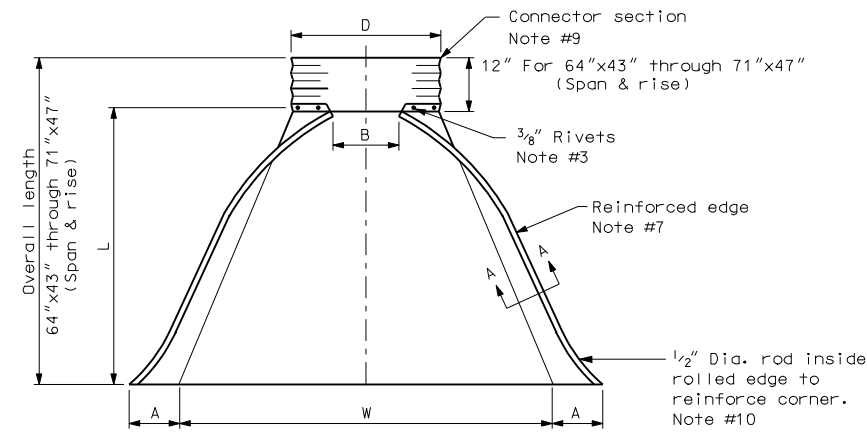
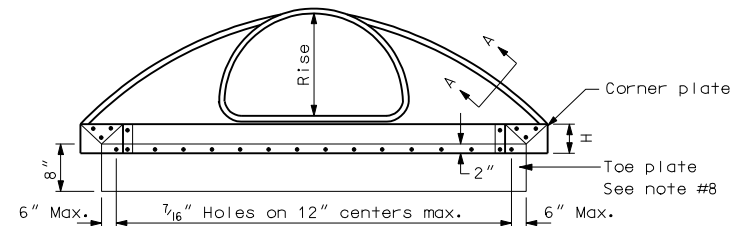


CORRUGATED ALUMINUM PIPE ARCH CULVERTS
AND END SECTIONS

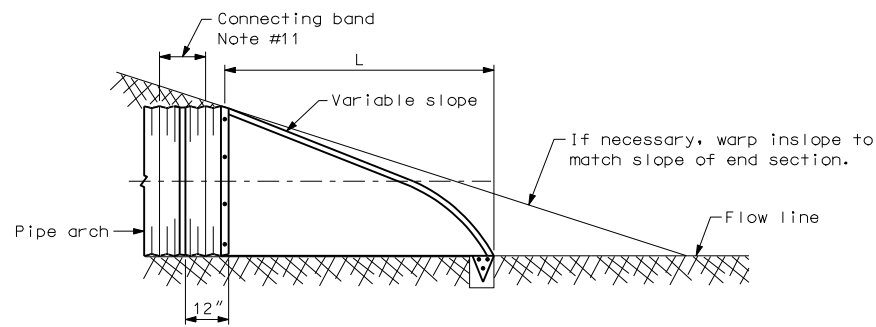
D-714-7



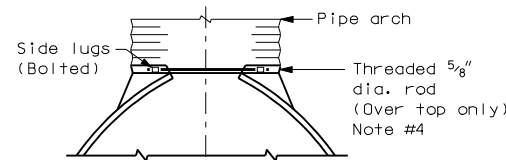
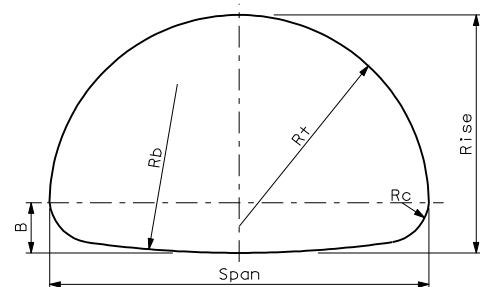
PLAN



ELEVATION



TYPICAL CROSS SECTION
(Showing connector section)



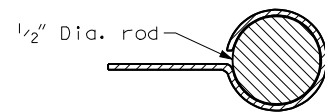
ROD CONNECTION DETAIL

Pipe size	Length-in.
18"x11"	14 3/8
22"x13"	16
25"x16"	17 1/2
29"x18"	19
36"x22"	22 1/4
43"x27"	25 3/8
50"x31"	28 1/2
58"x36"	31 5/8

1 3/4" Thread length both ends. 5/8"-11 UNC thread

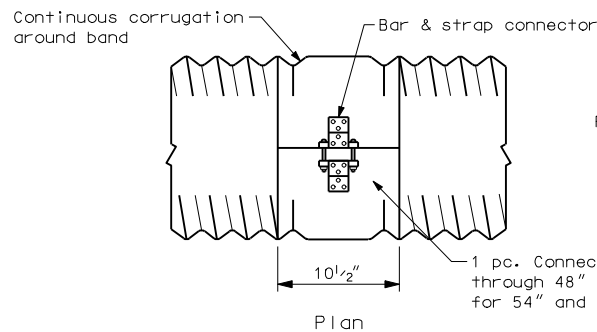
END SECTION NOTES:

- End sections shall be made in accordance with specifications M-196.
- Corner plate shall be the same material and thickness as end section.
- Rivets shall be aluminum alloy 6053-T4.
- Threaded rods shall be aluminum alloy 6061-T6.
- Side lugs, bolts, and nuts shall be hot-dipped galvanized steel.
- Multiple panel bodies shall have 2" lap seams which are to be tightly joined with 3/8" diameter rivets spaced 6" c. to c.
- Top edge of all end sections to have rolled edge reinforcement (See section A-A).
- Aluminum alloy toe plate required on end sections for pipe arch of 29" rise or larger. Thickness of toe plate to be same as end section. Where toe plate is needed, toe plate, nuts, and bolts are to be included in price bid for end sections.
- Connector section, when specified, shall be corrugated aluminum alloy pipe arch culvert.
- Reinforcement for edge of end section shall be alloy 6063-F.
- Connection bands shall conform to AASHTO M-196.

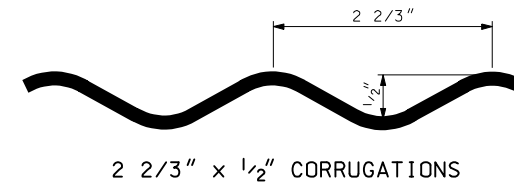
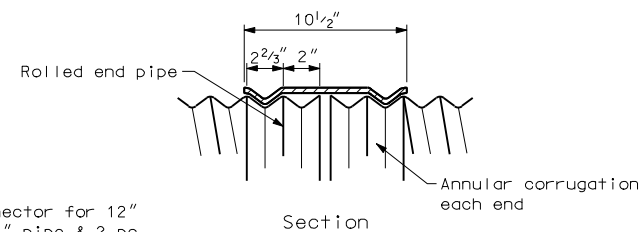


SECTION A-A

- Fill height tables are based on the following criteria:
- Embankment weight = 120 lb/ft³
 - Max. pipe deflection = 5%
 - Bedding - Class C
 - Compaction = 95% proctor density
 - Modulus of passive soil resistance (E') = 1400 psi
 - HS-20 Live load
 - Corner bearing pressure = 2 tons/ft²



CONNECTING BAND DETAILS FOR HELICAL, WELDED-SEAM CULVERT



PIPE ARCH DIMENSION		GALV. THICK.	END SECTION DIMENSIONS					APPROX. SLOPE RATE	BODY PIECE
SPAN IN	RISE IN		A IN	B IN	H IN	L IN	W IN		
17	13	0.060	7	9	6	19	30	2 1/2:1	1
21	15	0.060	7	10	6	23	36	2 1/2:1	1
24	18	0.060	8	12	6	28	42	2 1/2:1	1
28	20	0.060	9	14	6	32	48	2 1/2:1	1
35	24	0.075	10	16	6	39	60	2 1/2:1	1 or 2
42	29	0.075	12	18	8	47	75	2 1/2:1	1 or 2
49	33	0.105	13	21	9	53	85	2 1/2:1	2
57	38	0.105	18	26	12	63	90	2 1/2:1	2
64	43	0.105	18	30	12	70	102	2 1/2:1	2
* 71	47	0.105	18	33	12	77	114	2 1/2:1	3

* These sizes have 0.135" thick center panels.
Manufacturers tolerances of above dimensions will be allowed.

RIVETED OR HELICAL FABRICATION

2 2/3" BY 1/2" CORRUGATIONS							
SPAN IN	RISE IN	MIN. COVER IN	MAXIMUM FILL HEIGHT (FEET) FOR METAL THICKNESS				
			0.060	0.075	0.105	0.135	0.164
18	11	18	15				
22	13	18	14				
25	16	18	12				
29	18	18	10				
36	22	18	9				
43	27	18		9			
50	31	18			8		
58	36	18				8	
65	40	18				8	
72	44	18					8

DIA. OF EQUAL PIPE IN	SPAN IN	RISE IN	WATER-WAY SQ FT	LAYOUT DIMENSIONS			
				B IN	Rc IN	Rt IN	Rb IN
15	18	11	1.1	4 1/2	3 1/2	10 1/16	19 1/8
18	22	13	1.6	4 3/4	4	11 1/8	37 1/16
21	25	16	2.2	5 1/4	4	12 3/4	33 1/2
24	29	18	2.8	5 1/2	4 1/2	14 3/4	55
30	36	22	4.4	6 1/4	5	18 1/4	73 1/4
36	43	27	6.4	7	5 1/2	21 9/16	91 9/16
42	50	31	8.7	8	6	25 1/8	97 1/4
48	58	36	11.4	9 1/4	7	29 1/8	115 1/16
54	65	40	14.3	10 1/2	8	32 3/4	129 5/16
60	72	44	17.6	11 3/4	9	36 5/16	142 5/16

PIPE ARCH CULVERT NOTES:

All dimensions are measured from the inside crests of the corrugations. A tolerance of plus or minus one inch will be permissible in span, rise, and B. The dimension B shall be measured vertically from a horizontal line drawn across the widest portion of the arch.

The lapped longitudinal seams shall be factory riveted and shall be staggered so as to alternate on each side of the center of the top of the arch by approximately fifteen percent of the periphery.

Pipe arch culverts shall conform to the applicable requirements of AASHTO M-196 or M219-66.

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-1-86	
REVISIONS	
DATE	CHANGE
04-28-89	Toe plate note
06-25-03	Revised layout
12-01-04	PE Stamp added

This document was originally issued and sealed by MARK S GAYDOS, Registration Number PE-4518, on 12/01/04 and the original document is stored at the North Dakota Department of Transportation